

DETAILED ACTION

This Office action is in response to the amendment filed February 26, 2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 7 and 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 11001692 in view of Krull (US 5,391,632).

JP teaches a low sulfur middle distillate fuel oil comprising less than 0.2 wt % sulfur. The fuel oil contains from 0.001-0.5 wt % of a C₈-C₃₀ fatty acid mixture which contains unsaturated fatty acids having a single double bond and a fatty acid containing two double bonds and other additives such as flow improvers. The acids are used in a ratio of 1:3 to 15:1 (see claim 1). At paragraphs 16 and 17, JP teaches adding saturated fatty acids and resin acids to the mixture. JP teaches the use of nitrogen-containing compounds (amides/salts) that function as cold temperature fluidity improvers (paraffin dispersants) at a ratio of 1:10-5:1 (see paragraphs 0019-0020). The fluidity improvers also include copolymers such as ethylene vinyl esters. JP also teaches that the fuel additive may be prepared as a concentrate containing 20 to 80%

by weight solvent (see paragraph 24). JP teaches the limitations of the claims other than the differences that are discussed below.

In the first aspect, JP differs from the claims in that it does not specifically teach the claimed polar nitrogen-containing compound. However, Krull teaches this difference.

Krull teaches terpolymers based on unsaturated dicarboxylic anhydrides, bivalent compounds and polyoxyalkylene ethers. These terpolymers are the same as those of the instant claims (see col. 2, lines 34-68; col. 3, lines 1-68; col. 4, lines 1-35). Krull teaches that the terpolymers are used as paraffin inhibitors in crude oils and petroleum products such as middle distillates (see col. 9, lines 19-26). The terpolymers are used in an amount from 10-10,000 ppm (see col. 9, lines 32-35).

It would have been obvious to one of ordinary skill in the art to add the paraffin dispersant of Krull with those of JP because Krull teaches that combining the nitrogen-containing compounds of his invention with other cold temperature fluidity improvers, such as those set forth in JP, result in paraffin crystals that precipitate on cooling and remain dispersed (see col. 2, lines 21-32; col. 9, lines 44-65).

In the second aspect, JP differs from the claims in that it does not specifically teach the iodine number of the fatty acid mixture. However, since the fuel additive of JP comprises a major amount of unsaturated acids it would be reasonable to expect that the iodine number of the fatty acid mixture would be at least 40 g of I/100g, absent evidence to the contrary.

With respect to claim 18, it would be reasonable to expect that such properties are present in the composition upon admixture of the fatty acid mix and cold flow improvers, especially in view of Krull teaching that his cold flow improver disperses paraffins at temperatures between -13 and -20 C (see col. 11, lines 17-25).

Response to Arguments

Applicant's arguments have been considered but are not deemed persuasive.

Applicant argues that JP discloses only that fatty acid mixtures may be combined with a cold flow improver in a fuel oil as a minor fraction of the fuel oil.

Applicant's claims contain the transitional phrase "comprising". The transitional term "comprising", which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. See, e.g., *Mars Inc. v. H.J. Heinz Co.*, 377 F.3d 1369, 1376, 71 USPQ2d 1837, 1843 (Fed. Cir. 2004). Therefore, the claims do not exclude fuel oil.

Applicant argues that fatty acids are not cold flow improvers and their use in resolving cold flow issues would be antithetical to one skilled in the art concerned with avoiding solid formation.

JP teaches that the fatty acid mixture of its invention does not obstruct the effect of low-temperature flow improving agents and can be mixed with low temperature flow improving agents at any mixing ratio (see paragraph 19).

Applicant argues that JP teaches that the fatty acids may be concentrated in a first solvent and the cold flow improvers in a second solvent and that these different

concentrations may be combined with the fuel oil separately. Applicant argues that to combine both additives in the same concentrate would limit the flexibility of the individual additive concentrates.

It is well settled that the selection of any order of mixing ingredients is *prima facie* obvious. Applicant has not shown that by JP adding the additives separately that it produces undesirable results. Furthermore, it would have been obvious to combine the additives to minimize the number of concentrates one would need to work with when the additives are combined with fuel oil.

Applicant argues that JP only discloses blends of middle distillate fuels with fatty acids and cold flow improvers, not concentrates of fatty acids and cold flow improvers in a single concentrated additive.

Applicant's claims do not exclude the presence of fuel oil. The transitional term comprising is inclusive or open-ended and does not exclude additional, unrecited elements, even in major amounts.

Applicant argues neither JP nor Krull discloses that combining fatty acids with cold flow improvers improves the properties of fatty acid mixtures.

The examiner agrees. However, the rationale for combining the prior art maybe different from Applicant's. JP teaches that the cold flow improvers and the fatty acid maybe present in the fuel oil. JP also teaches that combining the fatty acid mixture and the nitrogen containing compounds of his invention with other cold flow improves result in paraffin crystals that precipitate on cooling and remain dispersed.

Applicant argues unexpected results with the combination of the fatty acid mixture and flow improver.

Applicant's data have been reviewed (previous declaration) and the examiner finds that the showings are not commensurate in scope with the claims. The showings are much more narrow than the claims which exemplifying a mixture of two or three unsaturated fatty acids. Applicant's fatty acid mixture of the claims reads on far more compounds than are disclosed. The examiner cannot ascertain if unexpected results are obtained.

Applicant argues that Krull discloses combining the terpolymer of his invention with other cold flow improver, not fatty acid mixtures.

The examiner has never taken the position that the fatty acid mixture functions as a paraffin inhibitor. The examiner's position is that the skilled artisan having JP and Krull before him would be motivated to add the nitrogen-containing compounds of Krull to JP because JP states that the fatty acid mixture can be mixed with low-temperature flow improving agents and Krull teaches that his flow improving agent improves the flow properties of oils when combined with flow improvers such as those taught by JP.

2. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

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shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cephia D. Toomer whose telephone number is 571-272-1126. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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/Cephia D. Toomer/
Primary Examiner
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